2.0 Guiding Principles of Safety Management

Policy, Leadership, and Worker Empowerment

GUIDING PRINCIPLE #1: Line management is directly responsible for the protection of the public, the workers, and the environment.

DOE line management has effectively communicated safety policies and been an advocate for integrated safety management.

DOE line management has developed and communicated effective safety policies, and has demonstrated commitment to improving safety performance at SNL through a number of significant actions. DP, EM, AL, and KAO have embraced DOE's approach to developing an integrated safety management system. DP and EM have actively participated in developing and implementing provisions of DOE P 450.4, *Safety Management System*, and the DOE Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 95-2, which addresses safety management. Mid-level managers and staff of DP's Office of Research, Development and Testing have been directly and substantively engaged in SNL activities to implement ISMS. AL and KAO have been aggressive in advocating integrated safety management system implementation at SNL. At the direction of AL and KAO, SNL accelerated their development of an initial implementation plan for ISMS; this plan was approved by the AL Manager in December 1996. KAO has also defined and documented an effective process for establishing expectations for SNL safety performance into an appraisal agreement with SNL. The objectives in the appraisal agreement are performance based and encourage good management practices; however, continuing management attention is needed to strengthen the application of the appraisal agreement as a tool (discussed further under Performance Evaluation and Feedback).

DOE has recently taken positive steps to address two issues that have impeded its leadership:

- Until recently, the implementation of DOE's pilot line management oversight program had placed a moratorium on line management appraisals for a number of DOE laboratories, including SNL. During this two-year period, AL and KAO options were constrained and they did not aggressively address SNL safety performance. Information for judging the effectiveness of SNL safety performance was limited to SNL self-assessment processes and KAO Facility Representative activities. Weaknesses in those processes (discussed further under Performance Evaluation and Feedback) placed DOE in a position of having insufficient reliable information to assess the status of safety at SNL. AL and KAO terminated the oversight pilot in April 1997, several months before its scheduled expiration, and have taken steps to increase DOE involvement and visibility at SNL.
- Historically multi-program laboratories, including SNL, have received conflicting and uncoordinated guidance and direction

from the various DOE organizations. As discussed further under Clear Roles, Responsibilities, and Accountability, DP leadership is effectively dealing with this issue by breaking down longstanding institutional obstacles to streamline responsibilities and provide clear and coherent direction within the DOE weapons complex. In addition, AL has developed a Site Integration and Control Board for each site, including SNL, to ensure consistent and clear communication to the contractor. This Board includes representation by all programmatic interests and the area office.

SNL has made progress in implementing the integrated safety management system.

At the contractor level, SNL is implementing ISMS through a phased approach. Prototypes have been established in two major operating divisions. All divisions will have begun implementation by mid-October 1997, with completion scheduled for September 1998. SNL has also effectively defined safety policies and goals; these policies and goals are included in SNL's strategic vision and communicated through a set of documents that begin with the SNL Strategic Plan, which includes safety as one of the eight strategic goals for SNL. Various subordinate documents delineate the flowdown of policy to the operational level, including the ES&H Policy, ES&H Program Documents for each safety discipline (e.g., industrial hygiene), and the ES&H Manual, which identifies a broad set of common policies and requirements applicable to all laboratory operations.

SNL senior management has also taken a number of steps to demonstrate their personal commitment to improving safety performance, including:

- Focusing on safety issues at the highest levels of its organizational hierarchy
- Elevating the laboratory-wide independent appraisal program to report directly to the Executive Vice President to address generic ES&H subjects
- Giving visibility to organizational and individual accountability by including safety in the performance evaluations and salary administration processes
- Providing information to familiarize upper managers with the concepts and elements of the ISMS, and to improve awareness
- Deploying ES&H professionals directly into daily operating activities of the organization to integrate safety and mission activities and to improve efficiency.

SNL has established mechanisms to empower workers.

SNL management has also established a number of mechanisms and approaches to foster worker empowerment. Mechanisms to motivate and reward worker participation in safety include the safety award program and use of the Performance Management Form for ES&H performance. SNL and KAO have established a clear authority for all workers to stop work if they believe that their work, or work they observe by others, is unsafe. Most workers interviewed indicated that they believe that the work environment is safe and that safety issues raised by workers are taken seriously by management. Workers have numerous avenues to raise ES&H concerns, including a hotline directly to the ES&H Center, which is within the Laboratories Services Division. If anonymity or confidentiality is a concern, employees can use the AL, KAO, or SNL Employee Concern Program to report issues. Unions at SNL are also vocal and play an important role in advocating safety improvements and promoting worker involvement.

AL, KAO and SNL have also established an effective forum for soliciting and considering stakeholder input into ES&H activities at SNL. The primary vehicle for that input is the SNL Citizen's Advisory Board, which meets frequently with KAO and SNL management to voice concerns and provide input regarding SNL activities, such as environmental restoration and waste management issues.

Two areas, which are discussed in more detail elsewhere in this report, require sustained leadership and attention from DOE and SNL senior management:

- **Improving subcontractor safety performance.** KAO and SNL management have recently increased their attention to this longstanding issue. Some positive steps have been taken to deal with recurring events, such as safety standdowns, improved approaches to defining requirements and assessing hazards, and monitoring subcontractor work; however, problems persist.

- **Overcoming impediments to full implementation of ISMS.** Of particular concern is the organizational autonomy of SNL operating divisions and resistance to institutional processes for hazard analysis, work control, and assessment activities.

In summary, DOE and SNL have established clear safety policies and goals, and have indicated a strong commitment to the implementation of the integrated safety management policy. DOE and SNL managers have initiated a number of actions, including implementing the ISMS prototypes, deploying ES&H personnel to the line, and implementing an independent assessment program, that are designed to enhance safety management and address longstanding issues. Continued attention is needed to ensure that these promising initiatives are further developed and implemented to achieve enhancements at the facility and activity level.

Clear Roles, Responsibilities, and Accountability

GUIDING PRINCIPLE #2: Clear lines of authority and responsibility for ensuring safety shall be established and maintained at all organizational levels within the Department and its contractors.

DOE Roles and Responsibilities

In response to the "120-Day Study," DP, AL, and KAO plan to consolidate resources and better coordinate activities.

Historically, multiple program sponsorship of DOE laboratories has resulted in confused roles and responsibilities between DOE Headquarters programs and DOE field organizations (AL and KAO), as well as inconsistent direction to the laboratories (as discussed under Policy, Leadership, and Worker Empowerment). Recently, these points were emphasized in a May 1997 report commonly referred to as the "120-Day Study." The report was prepared by an independent consulting firm for the Assistant Secretary for Defense Programs at the direction of Congress. The report identified significant duplication of effort and inefficiencies in the DOE weapons complex among Headquarters, AL, and the AL area offices. As a result of the findings in the 120-Day Study report and subsequent DOE reviews, DP has announced a number of actions to enhance DOE management of the weapons complex. These include:

- Consolidation of operational and ES&H responsibilities at the cognizant DOE area office—KAO for SNL

- Pooling of Headquarters and AL technical support resources, under the direction of AL; in part, this pooling of resources is designed to improve the support to area offices in fulfilling their safety management responsibilities, including reviewing authorization basis documentation (e.g., safety analysis reports), providing direction to line management, and overseeing contractor safety performance.

These changes, when fully implemented, are designed to streamline and improve understanding of roles and responsibilities between DOE Headquarters and site offices. Recent establishment of a memorandum of understanding

that clearly describes roles and responsibilities between DP and NE for management of Technical Area V facilities (the Annular Core Research Reactor and the Hot Cell Facility) is another positive step. In parallel with these major changes in the weapons complex, EM has increasingly pushed authority and resources for environmental restoration and waste management activities into field organizations over the past two years.

The net effect of these changes is that AL, and particularly KAO, will have increasingly important roles in safety management. As a result, establishment of clear roles and responsibilities within and between these organizations is more important than ever.

Currently, AL and KAO are attempting to better define roles and responsibilities and their relationship. AL is defining its roles and responsibilities through the ongoing development of the *Functions, Responsibilities and Authorities Manual* and sub-tier documents, such as AL's *Program Direction for Environmental Management*. Within KAO, roles and responsibilities are defined through technical qualification standards, various KAO procedures and manuals, and position descriptions. In order to address gaps, inconsistencies, and out-of-date provisions in these documents, KAO has also developed a single-page summary for each position that describes technical, programmatic, management, and administrative responsibilities. KAO Facility Representative roles and responsibilities are clearly defined and detailed in the Facility Representative Program Manual. KAO and SNL have also developed a written agreement that defines responsibilities and conduct of Facility Representatives and the interfaces between Facility Representatives and SNL personnel.

Technical Area V Nuclear Facilities

AL and KAO are working to better coordinate ES&H resources to provide effective support to KAO.

AL and KAO have not adequately coordinated AL's matrix ES&H resources to provide effective support to KAO. AL's ES&H resources are primarily within the Office of Technical Management and Operations (OTMO), which is transitioning from its previous role of managing AL's ES&H program (including the assessment function) to its new role as a support resource for AL area offices. In most areas of overlap between KAO and OTMO, working relationships are not clearly defined and documented. AL and KAO managers recognize this issue and are working to improve clarity and understanding of the currently ambiguous support relationships while addressing related questions in implementing the 120-Day Study recommendations.

SNL Roles and Responsibilities

SNL is focusing safety management responsibility on the operating division line management.

In the past year, SNL has increased efforts to focus safety management responsibility on operating division line management. As part

of this effort, SNL has deployed support teams of ES&H staff to the operating divisions and provided operating division managers more control of their day-to-day activities. Previously, ES&H activities performed by functional support organizations were fragmented, and operating division managers had little control over the ES&H support in their programs. Also, SNL ES&H Coordinators in each operating division provide ES&H-related information to the operating division vice presidents and other line managers, and provide a communications link between the ES&H Center and the operating division.

Relationships among program managers, line organizations, and building managers are not clearly defined, communicated, and understood.

Although progress has been made, there continue to be areas where additional attention by SNL is needed to ensure that evolving roles and responsibilities are clearly defined, understood, and effectively implemented. Most notably, complex relationships among program managers, line organizations, and building management have not, in many cases, been clearly defined, communicated, and understood by those involved in the process. For example, roles and responsibilities of SNL building managers and tenants have not been adequately coordinated with respect to maintenance and construction activities. Building managers assigned by the Facility Management and Operations and Engineering Centers are responsible for activities such as construction liaison, maintaining building infrastructure, and operating and maintaining building systems, including building ventilation and water treatment systems. Tenants are responsible for the safety of their operations within the building. These Centers have prepared draft landlord-tenant agreements for some facilities to better define roles, responsibilities, and the interface between the involved organizations. However, communications between building managers and tenants for work ongoing within the building has not been sufficient to ensure that personnel are aware of safety issues associated with maintenance/construction work in the building. Tenant managers and safety staff are less aware of, and express reluctance to take action regarding unsafe practices in, maintenance and construction activities because these areas are not within their jurisdiction.

New approaches to provide ES&H support, such as deployment of ES&H teams to the line, have preceded the ongoing efforts to update the SNL *Environment, Safety and Health Manual*, which defines ES&H roles and responsibilities at SNL. In addition, new organizational issues associated with SNL's efforts to deploy ES&H staff to the line, while recognized by SNL management through an ES&H Center Policy Statement, have not been fully resolved and need continued attention. For example, it is important to ensure that ES&H professionals who are assigned to support line managers have effective mechanisms to ensure that safety issues are addressed, even when those issues compete with the ability to achieve an operating division mission objective. The ES&H professionals have an important role within the SNL infrastructure, because they cut across program, line, and building management and thus are positioned to provide an important check and balance. Strong focus on clarifying and implementing the new policy and situational training are needed to ensure that ES&H staff have sufficient independence and autonomy to raise issues. ES&H team leaders are facing a complex challenge—they need to ensure that their staff understand and accept their role in facilitating compliance with ES&H requirements and, at the same time, promote the importance of the line support role and the integration of ES&H into line activities.

The Line Implementation Working Group has not been effective in facilitating resolution of complex safety issues.

SNL has established a number of standing ES&H committees that play an important role in safety. Most have cross-divisional representation and play a well defined role in providing a technical forum for a specific focus area or discipline. The Line Implementation Working Group is intended to play an especially important role in safety management at SNL. The Line Implementation Working Group is managed by the ES&H Center and includes representatives from all SNL operational divisions and ES&H organizations. The mission of the Line Implementation Working Group is to serve as a forum "to anticipate, coordinate, negotiate, and improve the efficient and successful implementation of line ES&H requirements throughout Sandia." Some senior managers also expect the Line Implementation Working Group to play a "corporate" role in identifying and developing laboratory-wide approaches for cross-cutting ES&H issues in areas such as laboratory-wide assessments. However, the Line Implementation Working Group has not been effective in facilitating resolution of complicated or controversial safety issues across the laboratory organizational structure (which provides for considerable autonomy among the operating divisions).

Accountability

Although DP managers are accountable for ES&H at SNL, formal measures for judging performance have not been established.

The DOE response to the 120-Day Study report emphasizes that, although greater authority will be delegated to area office managers, accountability for performance results will be retained by each manager up the line, including the AL Manager and the Headquarters program managers. Currently, the Assistant Secretary for Defense Programs is accountable for the safety performance of the weapons complex through the Secretary of Energy's Performance Agreement with the President, with which all Assistant Secretaries (including DP) have concurred, agreed, and committed to fulfill. The Agreement is designed to support DOE's strategic objectives, including the objective to achieve excellence in protection of workers, the public and environment. However, measurement of success against those expectations has been informal. The DP Deputy Assistant Secretary for Research and Development is responsible for safety performance for all research, development, and testing sites in the weapons complex. Accountability for safety performance is achieved through the annual appraisal process, which is tied to compensation decisions. One critical performance standard requires ensuring efficient operation and safety of research, development, and testing facilities; however, the information base used by the Assistant Secretary for Defense Programs in judging ES&H performance results for the Deputy Assistant Secretary for Research and Development is also informal.

The AL Manager reports administratively to the Associate Deputy Secretary for Field Management, who establishes performance expectations and conducts annual performance appraisals but does not have ES&H responsibilities. ES&H performance is captured as an element in the performance standards. While the process provides for input on performance by Headquarters cognizant secretarial officers and EH, the Assistant Secretary for Defense Programs has provided no input on recent annual appraisals.

Performance expectations for KAO personnel do not adequately address safety management.

KAO is the DOE line element most directly accountable for safety management at SNL. Performance of all KAO staff and managers is appraised through a "360 degree" feedback process, whereby the individual's manager, team leader, peers, and subordinates (where applicable) provide input. The performance expectations used in this process are focused primarily on program/project

management and do not directly address accountability for safety management.

SNL operates under a fixed-fee contract. Unlike recent contracts for other sites that have been implemented in accordance with DOE's contract reform initiative, fixed-fee contracts do not provide financial incentives or rewards for safety performance. Because of this, as described under Policies, Leadership, and Worker Empowerment, DOE and SNL have developed an appraisal agreement that provides the foundation for accountability against agreed upon expectations. Consistent with one of the recommended measures of the contract reform initiative, this appraisal agreement is used to determine compensation for SNL senior managers. However, as discussed under Performance Evaluation and Feedback, weaknesses in DOE and SNL assessment programs and implementation of the appraisal agreement hinder AL and KAO's ability to effectively evaluate contractor ES&H performance.

SNL has emphasized organizational and individual accountability but has not stressed accountability for timely correction of identified deficiencies.

SNL has emphasized organizational and individual accountability for ES&H performance through a formal system embedded within the SNL performance evaluation and compensation program. Performance Management Forms are prepared for all managers and workers and are used to determine financial rewards for strong ES&H performance. Safety awards are presented throughout the year to encourage constant attentiveness to safety. However, as discussed under Performance Evaluation and Feedback, there is no clear link that holds line managers accountable for timely correction of identified deficiencies in their area of responsibility.

Accountability for managing subcontractor safety performance is an area of weakness at SNL. There are several mechanisms for establishing and enforcing accountability, such as punitive measures for contractors that do not adhere to SNL ES&H practices, exclusion from bidding future contracts for contractors with poor ES&H performance, and holding individuals accountable through punitive measures. Until recently these mechanisms have been used sparingly. In addition, punitive measures are more frequently imposed on individual subcontractor employees, while the subcontractor organization is not held accountable. SNL has recently become more aggressive in using these mechanisms as awareness of recurring safety issues in subcontractor work has increased.

In summary, DOE has committed to streamline roles and responsibilities throughout the DOE weapons complex line management chain in response to the recommendations of the 120-Day Study. A clear transition plan for the shifting of responsibilities and defining the relationships between the support resources and KAO has not been developed. At SNL, increased focus on line management responsibility for safety has led to deployment of ES&H support teams to operating divisions. Although this is a positive step, continued management vigilance is needed to better define roles and responsibilities, particularly relationships between line programs, facility "owners," and ES&H support teams. It is also essential that laboratory-wide mechanisms be strengthened to deal effectively with complicated or controversial issues across autonomous operating divisions. Even though both DOE and SNL have a number of mechanisms in place, individual and organizational accountability remains an area of weakness.

Balanced Priorities

GUIDING PRINCIPLE #3: Resources shall be effectively allocated to address safety, programmatic, and operational considerations. protecting the public, the workers, and the environment shall be a priority whenever activities are planned and performed.

As a DOE multi-program laboratory with a fiscal year (FY) 1997 budget of $1.2 billion, SNL receives

Operations involving radioactive waste at the Radioactive and Mixed Waste Management Facility

funding from several DOE Headquarters program offices and from other federal agencies and organizations. In recent years, SNL has experienced some ES&H funding reductions, which have been accommodated through organizational consolidation, matrix operations, and reductions in program management functions. SNL has ensured that critical programs, such as implementation of ISMS, receive appropriate funding.

The Laboratories Services Division provides ES&H support through direct and indirect funding.

SNL's Laboratories Services Division provides most of the ES&H support to program activities from overhead and funds provided directly by the programs. SNL line programs use their direct accounts to fund system and equipment upgrades and occasionally acquire ES&H support from outside contractors, as is the case for the Radioactive and Mixed Waste Management Facility. The Laboratories Services Division is comprehensive in its approach to providing ES&H support. Three categories of ES&H services are provided:

- ES&H infrastructure services, such as instrument calibration and dosimetry, are paid for by the indirect funds from an overhead account established with contributions by the various divisions determined using a "flat tax."

- Facility support for areas with special ES&H needs, such as maintenance of special air monitoring and ventilation equipment, is based on the characteristics of occupied space; costs of these services are paid for from an overhead account.

- ES&H support teams providing professional technical expertise, such as industrial hygienists and safety engineers, are paid for by the programs through a combination of direct and indirect funding.

AL works closely with KAO, SNL, state and Federal regulators, and public interest groups to set priorities for environmental restoration.

SNL's *direct* funded ES&H needs are determined using guidance from DOE consistent with strategic goals and objectives reflected in various planning documents. For example, *Accelerating Cleanup: Focus on 2006* (formerly, the *Environmental Management Ten-Year Plan*) provides the basis for SNL's ES&H direct funding budget associated with waste management and environmental restoration programs. Direct funding of ES&H programs is effectively allocated based on existing and expected hazards associated with operations. Risk scores, prepared by SNL in cooperation with KAO project managers, are based on judgments concerning worker and public safety, environmental protection, compliance with regulatory requirements, and impact on mission objectives. For example, AL worked closely with

KAO, SNL, and stakeholders (e.g., state and Federal regulators, public interest groups) to develop risk scores and set priorities for environmental restoration sites at SNL. Cost estimates for ES&H activities prepared by SNL are submitted to DOE Headquarters for review and approval through AL and KAO. This process has led to a FY 1997 direct-funded ES&H budget of $32.8 million. As needed changes to ES&H resource allocations arise, SNL applies a baseline change control process to its direct funding account. During 1997, more than 20 percent of waste management ES&H resources were reallocated using this procedure.

SNL performs rigorous project reviews and applies a formal prioritization process to evaluate the effectiveness of ES&H resource expenditures and make efficient allocation decisions.

SNL's *indirect* ES&H budget ($25.5 million in FY 1997) is established through an effective process with significant involvement by SNL's senior management and is consistent with the SNL strategic plan. Target funding for ES&H is established based on historical levels. The Laboratories Services Division responds to this initial funding level by performing rigorous project reviews and applying its Integrated Division Management System prioritization process. This process uses several evaluation criteria in key performance areas, including customer satisfaction, compliance, cost-effectiveness, and employee satisfaction, to provide managers with a tool to better evaluate the effectiveness of ES&H resources expenditures and to make efficient allocation decisions. ES&H team leaders, ES&H Coordinators, subject matter experts, the Line Implementation Working Group, ES&H personnel assigned to programs, and in some instances program managers participate in the resource management and deployment process. ES&H Coordinators work closely with ES&H team leaders to identify requirements and determine the level and duration of support from overhead accounts; the results of this process are documented in formal memoranda of understanding between the ES&H Center and the line programs.

The SNL prioritization process is effective.

The SNL process is mature and effective, and appropriately considers the balance between mission objectives and ES&H priorities. The process is comprehensive and allows for participation of many individuals with a wide range of expertise as well as DOE and stakeholders.

Management of deployed ES&H resources, such as ES&H support teams, considers hazards, needs, and effectiveness of resource utilization. SNL senior management has demonstrated flexibility in allocating additional overhead funding to ES&H to ensure that problem areas are addressed. For example, additional funding was approved in 1997 for radiological protection needs. The additional funding allocated to this program will not be distributed until SNL Laboratories Services Division personnel have completed an examination of its radiological protection program to identify areas where cost savings may be realized and have prepared a plan to achieve identified efficiencies. Reallocation of resources to address explosives safety and electrical safety needs is also being considered.

Overall, resource levels allocated for ES&H support at the laboratory are sufficient, as KAO and SNL program managers indicate that their respective ES&H allocations are commensurate with the hazards associated with work being performed. In addition to the ES&H resources available through the Laboratories Services Division ES&H Center, there are over 65 ES&H Coordinators funded directly by the line programs at SNL; for FY 1997, approximately $5.8 million was expended on ES&H Coordinators and the Line Implementation Working Group. The ES&H Coordinators help identify line safety needs and interface with the ES&H Center to facilitate compliance with ES&H requirements.

Decision makers do not get sufficient feedback on hazards and issues identified during operations.

Although the elements of an effective ES&H resource allocation process are in place, reallocation of resources throughout the fiscal year relies on SNL's ability to provide accurate and timely information on hazards and issues identified during operations. Decision makers are currently not receiving such feedback, because processes for providing them information are informal, and there are weaknesses in information developed by hazards analyses and assessments (discussed further under Hazards Analysis, Work Planning, Hazards Controls, and Operations Authorization, and under Performance Evaluation and Feedback). Further, SNL's hazards analysis, work planning, and control for significant "in-house" facility modifications at Technical Area V are not sufficiently rigorous. SNL personnel cited limited funding from NE as a reason that less rigorous analyses were performed.

While ES&H needs are currently receiving adequate priority and resources, competition among programmatic needs for ES&H technical support is increasing amidst shrinking budgets and continuing pressure to reduce overhead, leaving ES&H measures funded primarily through overhead vulnerable to reduction. SNL is currently evaluating alternative strategies for allocating some base level of ES&H support from overhead resources to ensure that programs receive their "fair share," and is exploring candidate pricing structures for establishing a "just" price for additional ES&H professional support to be paid for directly from the program accounts.

In summary, although some weaknesses were noted, the DOE and SNL approach for defining sitewide program needs and the required resources is comprehensive and risk-based and considers the balance between ES&H with mission requirements. The approach includes conscientious application of risk-based techniques to establish appropriate budgets and allocate resources where needed. However, weaknesses in information available from hazards analysis and issues management processes limit the effectiveness of the allocation process.

Competence Commensurate with Responsibility

GUIDING PRINCIPLE #4: Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

Department of Energy

Consistent with the increased delegation of responsibilities and authorities to the field that has occurred over the past few years, Headquarters elements responsible for SNL activities have only a few staff that focus on SNL. Currently, there are three technical staff in DP's Office of Research, Development and Testing Facilities who have responsibility for SNL-related activities (operational awareness, field interactions, and landlord activities). DP's Office of Research, Development and Testing Facilities relies on support from technical resources within DP's Office of Technical and Environmental Support for specific expertise on an as-needed basis. Both offices are complying with requirements of the DOE Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 93-3, which establishes the Technical Qualification Program, and have established appropriate qualification standards. However, approximately 25 percent of the DP personnel in the Technical Qualification Program are not on schedule to complete their qualifications by the May 1998 and 1999 (Senior Technical Safety Managers) deadlines.

Similarly, EM and NE, which have limited missions at SNL, delegate operational responsibilities to the field and have few staff dedicated to SNL activities. NE has not yet designated a full-time Headquarters program manager within its Office of Facilities for the Annular Core Research Reactor and the Hot Cell Facility operations; the responsibility is currently performed on a part-time basis by the

Headquarters program manager for another facility who is on site at Technical Area V approximately half the time, and a full time KAO program manager.

Although KAO's respon-sibilities are increasing, AL continues to have a significant role in providing specialized ES&H technical support.

Within AL, OTMO retains a significant technical support role to the area offices. OTMO has a broad array of staff with appropriate qualifications in the ES&H disciplines. OTMO has some shortages, most notably limited staff with the "practitioner-level" experience required to review and approve authorization basis documentation. The planned consolidation of OTMO and much of the DP Office of Technical and Environmental Support technical resources will further strengthen the technical capability of AL. OTMO is also complying with the requirements of the DOE Technical Qualification Program and has established appropriate qualification standards.

KAO has sufficient qualified staff in most areas but has a shortage of qualified Facility Repre-sentatives.

Staffing levels within KAO have steadily increased over the past several years and are generally adequate to fulfill their safety management responsibilities. Except for Facility Representatives, KAO has sufficient in-house staff in areas where full-time technical expertise is needed. Overall, KAO managers and staff demonstrated a high degree of technical competence, practical experience, and understanding of SNL operations. To coincide with SNL's increase in production efforts (e.g., neutron generators, and the molybdenum-99 production project), efforts by KAO are under way to improve the operational experience of some managers through mentoring and field training at commercial facilities. Competence among KAO Facility Representatives is appropriate to their responsibilities, and a high degree of teamwork is evident.

Where specialized and part-time support are required, KAO is able to utilize AL OTMO resources. However, KAO is not effectively utilizing matrix support from OTMO for reasons that relate to weaknesses in organizational relationships (discussed under Clear Roles, Responsibilities, and Accountability) as well as the competition for resources with other high-priority AL sites, particularly Los Alamos National Laboratory and the Pantex Plant.

KAO is on track to meet Technical Qualification Program commitments.

The KAO program for satisfying the requirements of the Technical Qualification Program is adequately implemented, although KAO has not developed site-specific training procedures. Qualification standards have been developed and KAO is on schedule to certify completion for all 28 Technical Qualification Program positions by May 1998. Four Technical Qualification Program positions designated as Senior Technical Safety Managers are expected to be certified as complete by May 1999.

The Facility Representative qualification training program is well defined, documented, and effectively implemented. Evaluations, including oral boards, written exams, and final facility walkdowns, are performed to ensure that trainees are technically competent and proficient in their assigned facilities. KAO managers, including the area office manager, participate directly in the oral boards. Knowledge of conduct of operations, hazards, and systems at assigned facilities was found to be appropriate for all Facility Representatives.

KAO has experienced problems with retention of Facility Representatives. Current Facility Representative staffing levels are inadequate for the scope of duties, which is affecting the ability of Facility Representatives to complete their final

qualifications. Currently, there are only two fully qualified (phase I and phase II) Facility Representatives; the remaining six Facility Representatives are phase I qualified. KAO also has two vacant facility representative positions for which there are currently no recruitment actions under way due to DOE-wide downsizing. Reassignment of Facility Representatives to cover voids created by staff departures has slowed progress in completing qualification requirements. KAO is addressing this issue and has recently hired an additional Facility Representative trainee.

KAO has the primary responsibility for oversight of the effectiveness of SNL training programs. The AL Qualification and Training Branch provides support to KAO through a memorandum of understanding, particularly in the area of conducting training assessments for nuclear facilities. However, KAO does not have an assessment strategy, a plan, and personnel to comprehensively evaluate SNL training activities.

Equipment at the Neutron Generator Facility

Sandia

SNL managers and staff generally have appropriate backgrounds and considerable experience.

Although the SNL work force has been gradually reduced over recent years it continues to benefit from the strong academic credentials and technical backgrounds of the staff. SNL has developed a strategic approach to managing skill mix and ensuring retention of core competencies in the future through use of staffing plans prepared by line managers. Restructuring of the workforce to deploy ES&H professionals into line organizations is a major element of SNL's strategy for enhancing the ES&H capability of the line organizations. Some current staff shortages were noted in operators at the Annular Core Research Reactor, explosives safety experts, radiological protection personnel, and waste certification staff.

Deploying ES&H resources to line organizations is a major element of SNL's strategic approach for integrated safety management.

SNL managers, operators, engineers, and staff and ES&H support team members had the appropriate educational background and technical knowledge, as well as considerable site-specific experience, for their job assignments. They exhibited a clear understanding of hazards associated with the facilities they provide support to and are an effective force in enhancing the ES&H awareness and capability of the line organizations. This is especially important in light of the weaknesses in qualification training of line ES&H Coordinators, building managers, welders, and subcontractors.

Competency in SNL employees is strengthened through training courses provided in part by a centralized Corporate Training and Development group and by line divisions and departments. This

group provides sitewide, cross-cutting, performance-based training and instructional design support and line organizations provide less rigorous specialized and on-the-job training to their workers. The Corporate Training and Development group and line groups provide effective training where safety policies and goals are integrated into each course.

The effectiveness of training programs is limited by such factors as insufficient use of job qualification training for most SNL personnel with ES&H responsibilities.

However, the rigor of training development and implementation varies considerably across the site because it relies on line managers, some of whom do not have training backgrounds, to determine the best method. For example, personnel in Technical Area V reactor facilities and in the Safeguards and Security organization are subject to a more rigorous, systematic approach to training. Training Implementation Matrices identify training, qualification, and certification requirements for individuals and are used to help develop training program requirements. At the Radioactive and Mixed Waste Management Facility, the Facility Supervisor instituted a facility operator qualification program that applies the systematic approach to training in a graded fashion; this program is not cumbersome but is effective in raising the safety and technical competence of the facility operators. These programs may serve as a model for other training conducted at SNL.

Several factors that limit the effectiveness of SNL training include:

- For most SNL personnel, such as ES&H Coordinators, building managers, technicians, and crafts and maintenance personnel, job qualification training is not used as the basis for developing and maintaining technical competence. For example, ES&H Coordinators typically have good academic credentials but do not have a qualification program and, in some cases, do not have sufficient experience and training to perform in their expected role as an ES&H generalist.

- SNL currently does not have a sitewide training program manual and an organizational process to monitor the effectiveness of the line's training efforts or to share lessons learned.

More effective job qualification training programs could help mitigate the significant weaknesses in hazards analysis and work planning and control, which contribute to implementation deficiencies and observed unsafe work practices (see Hazards Analysis, Work Planning, Control, and Operations Authorization).

Training requirements for subcontractors do not adequately address subcontractors on short-duration assignments.

With regard to subcontractor training, SNL tracks, monitors, and requires training for subcontractors who provide long-term support services such as heating, ventilation, and air conditioning technicians and general construction company personnel. However, SNL does not validate ES&H awareness or require/enforce training of subcontractors who are performing short-term work assignments (and who may do so on a number of occasions). The team noted several examples where short-term subcontractors were not familiar with their own company's safety plans, were unaware of hazards in their work space, or violated safety requirements.

SNL has also developed a sitewide automated database to help managers track employee training requirements and qualifications and to schedule training programs. Managers can request a variety of reports to track status of completed training, retraining dates, "no-shows," and out-of-compliance workers. SNL senior management has used this tool to help reinforce the importance of training by holding managers accountable for worker qualifications and requiring justifications for missing required ES&H training.

In summary, DOE (KAO, AL, DP, and NE) and SNL management and staff exhibited sufficient technical competence, experience, skill mix, and knowledge of hazards to effectively and safely manage the various research, weapons, and production-related programs. The ISMS program and movement of responsibility for training to line management are designed to help foster a safety conscious and knowledgeable work force. KAO and SNL need to develop a strategic approach to monitoring training effectiveness and accountability on a sitewide basis to ensure that the quality of training is maintained. In addition, SNL should re-evaluate the lack of qualification standards and required training and retraining for positions such as building managers and ES&H Coordinators.

Identification of Standards and Requirements

GUIDING PRINCIPLE #5: Before work is performed, the associated hazards shall be evaluated and an agreed-upon set of safety standards shall be established that, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

DOE and SNL have a responsibility to identify and analyze a wide range of ES&H-related requirements and translate them into policies, programs, and procedures that provide reasonable assurance that workers, the public, and the environment are adequately protected; this effort is typically referred to as requirements management. Standards and requirements originate from many sources, some of which are internal to DOE (such as DOE orders and nuclear safety rules) and others of which are external to DOE (such as Federal, state, and local laws and regulations, legal agreements and permits, and industry consensus standards). Establishing an orderly transition to a set of requirements that can be effectively tailored to specific work activities is a key element in DOE's approach to integrated safety management and in the DOE contract reform initiative and is described in a newly effective DOE Acquisition Regulation Clause, 48 CFR 970.5204 (DEAR Clause 2 and 78).

Department of Energy

Although Headquarters program offices participate in the development of new ES&H requirements (typically in conjunction with EH), most aspects of requirements management and implementation are delegated to the field. Program offices provide overall guidance and expectations on requirements management processes to facilities and activities under their direction. Historically, DP, as the landlord program office, has had the primary role in establishing these expectations at SNL. In recent months, NE has assumed programmatic responsibility for some SNL facilities, such as the Annular Core Research Reactor and the Hot Cell Facility, that are associated with the molybdenum-99 project. The change in programmatic direction has not resulted in any significant change in the approach to requirements management at SNL.

AL has been slow in transmitting the revised orders to SNL for incorporation in their contract and implementation.

AL and KAO have the primary DOE role in evaluating the applicability of internal DOE requirements to SNL and transmitting the requirements for implementation through incorporation into the SNL contract. Additionally, AL and KAO are responsible for ensuring that SNL has an effective process for identifying applicable requirements and tailoring them to suit the hazards of specific facilities and activities. DOE Headquarters completed revisions that consolidated and streamlined several important DOE ES&H orders in 1995. Although these new orders were transmitted to AL for implementation about two years ago, AL has been slow to complete the process of evaluation and implementation of new or revised requirements, as required by DOE P 450.2A,

"Identifying, Implementing and Complying with Environment, Safety and Health Requirements." Many of the new orders have not yet been transmitted to SNL for incorporation into the contract. This delay resulted from AL's approach to implementing the policy, which included comparison reviews of safety-related requirements between the old and new orders to ensure that important requirements are not dropped in the transition. AL has experienced difficulty in completing these reviews and has not defined a timetable to complete the reviews and transmit the new orders to SNL.

Some new requirements, such as strengthened provisions for suspect/counterfeit parts, are not being implemented at SNL.

While the new orders are not necessarily considered better than the old orders, some contain new requirements that will enhance safety management. For example, DOE Order 440.1, *Worker Protection Management for DOE Federal and Contractor Employees*, which contains stronger requirements for suspect/counterfeit parts and pressure safety programs, has not been transmitted to SNL for implementation.

During the past year, as part of the development and implementation of ISMS, AL and KAO have become more involved in monitoring and guiding SNL requirements management processes. In reviewing the SNL ISMS plan, AL raised a concern that the SNL plan did not adequately address identification of standards and requirements. AL, KAO, and SNL have established a "standards and requirements" working group to help resolve those concerns. The working group has helped SNL develop an approach to determining applicable requirements; however, only limited progress has been made in establishing a process for tailoring standards and requirements to workplace hazards.

Sandia

SNL requirements management processes have not been formalized, and the effectiveness of the flowdown of requirements to the working level has been inconsistent.

While progress has been made, SNL efforts to define and implement requirements management processes are not mature and, in some regards, have not been effective. SNL has elected to use a directives baseline management system for requirements, which mandates compliance with all requirements in their contract. Processes have been established for incorporating internal (DOE) and external (regulatory) requirements into corporate policies, programs, and procedures (see Figure 4). However, those processes are not formalized, and effectiveness of the flowdown of requirements to the working level has been inconsistent. For example, maintenance work control systems, required by DOE Order 4330.4B, *Maintenance Management Program*, for some non-nuclear facilities, were not in place for the line organizations. Additionally, requirements defined in DOE Order 5700.6C, *Quality Assurance*, have not been consistently incorporated into maintenance and work control programs for non-nuclear facilities. The ES&H Center has performed an analysis of the SNL requirements management system and has demonstrated a good understanding of the strengths and weaknesses of institutional processes. While SNL recognizes the need to better define and formalize requirements management processes, a corrective action plan, with commitments and milestones, has not yet been established.

Internal requirements applicable to SNL are transmitted to SNL by DOE and incorporated into the SNL contract (through amendments to Appendix J). Once received, a "responsible individual" is designated to evaluate the impacts of

Figure 4
SNL's Heirarchy of Requirements, Policies, and Procedures

the new requirements and develop an implementation plan as appropriate. Once KAO and SNL agree on the implementation plan, the "responsible individual" monitors implementation. However, there is no corporate process to check the quality of implementation, and SNL has not maintained documentation on the status of past implementation plans.

ES&H Center subject matter experts are tasked by the "responsible individual" to ensure that requirements are incorporated into the ES&H Manual. However, there is no systematic approach to trigger reviews of lower-tier documents, such as facility procedures, which also need to be updated to reflect new or changed requirements. Further, a process to ensure that line managers are aware of changes to requirements in their area of responsibility has not been established. For example, the changes in the Radiation Protection Program Manual are communicated to line managers through a computer subscription service; however, some line managers do not subscribe to this service and may not be cognizant of changing requirements.

Processes for identifying, analyzing, and incorporating **external requirements**, particularly Federal, state, and local laws and regulations, are not as well structured. External requirements are identified and screened by the SNL Legal Division, with insufficient involvement by ES&H subject matter experts to make informed applicability determinations. For those requirements determined to be applicable, there is no clear designation of a responsible individual for evaluation of impact and development of implementation plans. This informal process has been successful in identifying and communicating requirements in most cases but is not sufficient to ensure that external requirements are transmitted to affected organizations or incorporated into lower-tier documents (e.g., facility procedures). For example, U.S. Occupational Safety and Health Administration requirements for welder training and qualification (29 CFR 1910.253/4/5) were not captured by SNL in the SNL ES&H Manual or implementing procedures.

SNL needs to establish processes to tailor requirements to work activities.

Tailoring applicable standards and requirements to provide adequate controls for specific work activities is perhaps the most important and difficult aspect of a requirements management system. The processes must determine which of the broad "universe" of requirements apply to the activity, and then tailor those requirements to the work and incorporate them into hazard control mechanisms (e.g., procedures). SNL has not yet established such a process; all SNL requirements are considered to apply to all work activities. The SNL ISMS implementation plan commits to the development of a list of specific standards and requirements applicable to nuclear facilities for inclusion in the authorization agreement for those facilities. While still early in the implementation period for that commitment, managers at those facilities did not recognize the need for such an effort.

The absence of a tailoring process has resulted in problems with adapting requirements commensurate with the work being performed. For example, requirements for the SNL radiation protection program are documented in the corporate-level Radiation Protection Program Manual. This manual, however, is compliance-oriented and provides limited guidance on implementation. Some line managers and workers indicated that the manual was not a useful tool for effectively implementing the requirements. There is no guidance for tailoring Radiation Protection Program Manual requirements to the hazards of facilities such as the Annular Core Research Reactor, the Hot Cell Facility, or the Radioactive and Mixed Waste Management Facility. Another example involves inadequate tailoring of DOE Order 5480.19, *Conduct of Operations*, requirements to non-nuclear, low-hazard facilities. Several applicable conduct of operations principles, such as communications expectations, configuration management, and operator aid postings have not been incorporated in the SNL ten fundamental management standards for formality of operations. Issues were also identified with implementing

requirements as administrative controls to mitigate hazards for specific work activities (see Hazards Analysis, Work Planning, Control, and Operations Authorization).

SNL establishes **requirements for construction subcontractors** through pre-bid job specifications defining the scope of work, specialized specifications, and the Uniform Construction Package. The Uniform Construction Package, which includes a building modification hazards analysis, provides ES&H information necessary for construction activities. The Facilities Management Center within the Laboratories Services Division is updating the Uniform Construction Package to capture all ES&H requirements, including the need for permits, special training, and development of building modification hazards analyses. After awarding a contract and before authorizing work to begin, a "Sandia Delegated Representative" reviews the subcontractor's ES&H Plan to ensure that all hazards are addressed and that an appropriate set of requirements has been established. The Facilities Management Center has effectively used ES&H subject matter experts in this process to review subcontractor plans. Other organizations that are responsible for construction-like work, however, have no requirement to have a subject matter expert review the subcontractor Health and Safety Plan prior to acceptance by Sandia Delegated Representatives. Considering the fact that Sandia Delegated Representatives do not always have adequate ES&H training, their reviews may not be comprehensive.

In summary, AL efforts to transition SNL to a streamlined set of DOE directives has not been a high priority or well coordinated, resulting in slow progress. While improving, SNL processes for managing internal and external standards and requirements are not yet sufficiently mature to ensure that they are incorporated into the sitewide ES&H Manual. Additionally, processes to tailor requirements at the facility level to suit the hazards of specific activities are not well defined, and processes to translate requirements into effective administrative controls to mitigate workplace hazards vary in effectiveness.

Work in a "clean room" at the Microelectronics Development Laboratory

Microelectronics Development Laboratory

Hazard Analysis, Work Planning, Hazard Controls, and Operations Authorization

GUIDING PRINCIPLES #6 and #7: Administrative and engineering controls to prevent and mitigate hazards shall be tailored to the work being performed and associated hazards. The conditions and requirements to be satisfied for operations to be initiated and conducted shall be clearly established and agreed upon.

DOE sites are required to establish processes to ensure that hazards are analyzed, administrative and engineering controls are put in place to mitigate the hazards, and work is appropriately authorized

and performed. The level of control must be consistent with the need to protect the public, the workers, and the environment. The degree of rigor required to plan and control work will vary based on the type of work activity and the hazards involved.

SNL operates a variety of facilities with various types of nuclear, chemical, biological, and industrial hazards. The nuclear facilities reviewed in Technical Area V were the Annular Core Research Reactor, the Gamma Irradiation Facility, and the Hot Cell Facility, which are Category II nuclear facilities. The other facilities within the scope of the evaluation, the Microelectronics Development Laboratory, the Building 805/806/807 complex, the Neutron Generator Facility, and the Radioactive and Mixed Waste Management Facility, are all classified as low-hazard, non-nuclear facilities.

Hazards Analysis

Hazards analysis is an important safety element of the work planning process. After work is defined but before it is performed, hazards must be identified, analyzed, and categorized in order to allow appropriate administrative and engineering controls to be put in place to prevent or mitigate the hazards. The review of a number of different hazards analyses associated with work planning indicated significant variations in quality. Some of the hazards analyses reviewed were performed effectively and were appropriate for the level of hazards involved, such as most hazards analyses conducted by the ES&H Center to support Radioactive and Mixed Waste Management Facility operations. For non-routine work activities, there is no institutionalized SNL process, as part of a defined SNL ISMS framework, to ensure that hazards are adequately analyzed and used to establish controls prior to commencing work. Line organizations rely on individual knowledge, with little guidance or clearly specified expectations.

Hazards analysis processes are not sufficiently rigorous.

Many hazards analyses, particularly at the working level for new processes, construction, construction-like activities, and maintenance, were not sufficiently documented or did not adequately screen for or address the appropriate safety disciplines. For example, some building modification hazard analyses did not provide adequate descriptions of the work to be performed, which hindered proper identification of hazards. Hazards analyses at the activity level were often informal or not performed according to procedures, hazards or controls were not identified, and appropriate safety disciplines were not involved. Additionally, while many managers and ES&H Coordinators were involved in performing hazards analyses, line workers responsible for accomplishing work were not sufficiently involved in the development or verification of the hazards analysis.

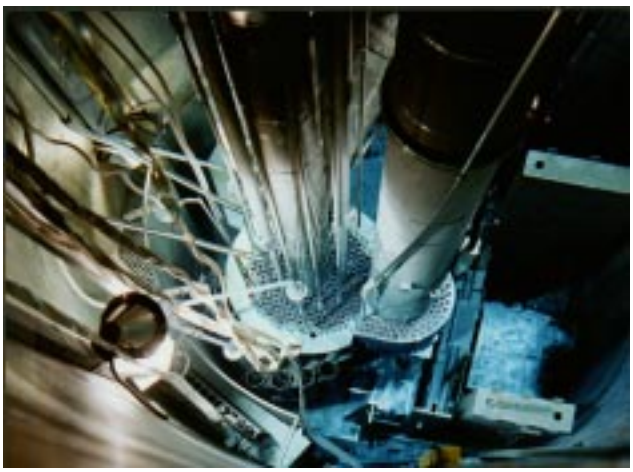
SNL has an aggressive schedule for upgrading primary hazard screenings.

Hazards change over the life of a facility and must be periodically reanalyzed. Many of SNL's facility hazards analyses do not adequately reflect current conditions. Recognizing this situation, SNL initiated an effort to reanalyze all hazards that would encompass all facility and routine work activity. This effort includes upgrading all existing preliminary hazards assessments to newer, more comprehensive assessments, which are referred to as "primary hazard screenings." SNL has established an aggressive schedule for this effort and plans to complete it by October 15, 1997.

The primary hazard screening determination is important because it is the formal mechanism for initially evaluating hazards and assigning a hazard classification to a facility. The hazard classification of the facility determines the appropriate level of further analysis, documentation, and level of approval that are required for the facility or work activity safety authorization basis. The primary hazard screening process is also used to identify potential hazards sources for specific work activities and determine the need for follow-on safety analysis documentation.

SNL has developed a computer-based tool called Integrated Safety, Environmental, and Emergency Management System to assist with development of primary hazard screening as part of their ISMS implementation. The system also has a new module to produce hazards assessments for low-hazard, non-nuclear facilities. It has been demonstrated to be a valuable and readily accessible tool, which promotes a consistent approach for performing primary hazard screening. The system does, however, require knowledgeable users who have in-depth understanding of its capabilities and limitations and who have done the required background research to adequately complete the process. Because of its widespread availability and use, there is a significant potential that the Integrated Safety, Environmental, and Emergency Management System tool will be used by personnel who are not adequately trained to use the tool or do not have the appropriate ES&H background to use it effectively. To meet their aggressive schedule, SNL has provided minimal opportunity for worker involvement in developing new primary hazard screenings.

The Integrated Safety, Environmental, and Emergency Management System represents a major change in hazards screening methodology for SNL wherein the computer performs a critical role in determining a facility's hazard classification. The tool has been improved and refined through several iterations with multiple subject matter experts. However, neither DOE nor SNL personnel have performed rigorous quality checks to ensure that it produces accurate results. Given that SNL will be converted to primary hazard screening in a relatively short period of time, more attention is required by SNL and DOE line management to provide assurance that the Integrated Safety, Environmental, and Emergency Management System primary hazard screening module is producing acceptable analyses and that SNL hazards analysis processes are receiving suitable involvement and review by knowledgeable personnel.



The Annular Core Research Reactor

Hazard Controls

Informal processes and work planning deficiencies were noted at most facilities.

SNL has not yet established a strong link between hazards analysis and controlling hazards as part of an effective work planning process. For facility maintenance work requests that were reviewed, it was a common practice to attach general hazard analysis information without analysis or specification of adequate hazards controls. Additionally, procedures, lockout/tagout requirements, and sequential work steps were often not listed, referenced, or included in work packages. In place of disciplined processes to plan work, there is often a heavy reliance on safety committees and the knowledge of the individual ES&H Coordinator for assurance that work activities are conducted safely. Significant work planning deficiencies were identified in all facilities reviewed with the exception of the Neutron Generator Facility.

Hazards controls include engineered controls and administrative measures. Administrative measures can include personal protective equipment, safety requirements imbedded in procedures, lockout/tagout, warning signs, or additional ES&H training. SNL has appropriately

established its preference for using engineered controls when possible. In general, engineered controls were effective and appropriately balanced with administrative controls. There were a number of problems, however, with establishing appropriate administrative controls for work activities. Some recent examples where administrative controls were not appropriately established for work activities include:

- The Annular Core Research Reactor tank was drained without developing an operations procedure as required by the Technical Area-V Conduct of Operations Manual.
- An Annular Core Research Reactor technician performed work below the lip of the tank (i.e., in a confined space) without a proper permit.
- Radioactive and Mixed Waste Management Facility personnel initiated work to stabilize five containers of depleted uranium debris without authorization documentation in place, and consequently without the appropriate personal protective equipment identified in the radiation work permit.
- Neutron Generator Facility hydrogen control system functional tests were performed at least twice within a six-month period with a procedure that had not been approved.

Operations Authorization

Work authorization processes for lower hazard work activities are not consistently defined.

Work authorization processes for maintenance, construction, and other non-routine work activities are not consistently defined or integrated with major elements of work planning such as hazards analysis and hazards controls. This results in some work activities proceeding without adequate controls being put in place because the work package did not receive an appropriate level of review. The absence of institutionalized expectations for documentation in work packages has resulted in overlooking hazards and authorizing work prior to implementing controls.

There have been some recent actions at the Radioactive and Mixed Waste Management Facility that are designed to improve work authorization processes. The Radioactive and Mixed Waste Management Facility supervisor has established "plan of the day" meetings and is developing processes for reviewing and approving work packages that adequately describe the work and hazards. Work authorization processes at the Radioactive and Mixed Waste Management Facility appear to be evolving in a manner consistent with the intent of ISMS.

For startup of facilities and higher hazard work activities, SNL follows guidance in AL Directive 5480.31, which establishes criteria for performing operational readiness reviews and less rigorous readiness assessments. The primary hazard screening hazard classification determination is important in determining whether a formal operational readiness review or readiness assessment is required to verify readiness prior to startup or restart of a facility or activity. For startup of the Neutron Generator Facility, a comprehensive readiness assessment process was executed that followed a specific readiness assessment plan of action through a phased approach. SNL teams from

The Hot Cell Facility

MODIFICATIONS TO THE ANNULAR CORE RESEARCH REACTOR AND THE HOT CELL FACILITY

New Mission: The Annular Core Research Reactor and the Hot Cell Facility are currently being modified to support a new mission of molybdenum-99 production for use as a medical isotope. After the conversion, the Annular Core Research Reactor must also maintain the capability to function in its old mission as a neutron pulse generator to support emergency testing for DP within six months of a request.

Modifications: The modifications being performed on the Annular Core Research Reactor are significant and involve removing reactor fuel and rods, replacing the reactor's central cavity with a molybdenum-99 target grid, removing an offset storage tube, and changing the core configuration. The modifications to the Hot Cell Facility involve removal of shielded gloveboxes, clean out of old processes, and setup for new processes to support separation of Mo-99 from other fission products in irradiated target assemblies.

Authorization Basis: The authorization basis for the Annular Core Research Reactor, which is still based on its old mission, consists of an upgraded Safety Analysis Report which meets DOE Order 5480.23, *Nuclear Safety Analysis Reports*, and technical specifications. Technical Safety Requirements have been submitted to DOE for approval. The authorization basis for the Hot Cell Facility is also based on its previous mission and consists of an upgraded Safety Analysis Report along with older Operational Safety Requirements. An update to the Operational Safety Requirements has recently been approved by DOE.

the risk assessment department successfully conducted independent assessments, and KAO personnel frequently observed the process and approved the startup. Preparations for the readiness assessment process were effective in increasing employee involvement at the floor level in hazard assessment and mitigation activities. Lessons learned in this effort could be appropriately applied to other SNL facilities.

Work Control

Ineffective work control practices and failure to comply with procedures has contributed to safety-related events.

A number of weaknesses were identified with SNL and subcontractor work control processes. In addition to the problems described above, there have been a number of occurrences that indicate that procedural non-compliance is common. For example, a plant protection system actuation at the Annular Core Research Reactor and a radiological hot particle incident at the Radioactive and Mixed Waste Management Facility are instances where hazardous work was not performed in accordance with established requirements. Oversight team members observed two instances of workers having inadequate fall protection. KAO has also documented several other recent similar events. An analysis of reportable events indicated that approximately 50 percent of the last 80 reportable occurrences at SNL involved inadequate procedures or failure to follow procedures. A contributing cause may be the minimal supervision (by SNL or subcontractors, as appropriate) and line oversight (by SNL for subcontracted work) of many non-routine work activities, including maintenance, construction, and construction-like work.

Isotope Production Process for the Molybdenum-99 Project

Nuclear Facilities Hazards Analysis, Authorization Basis, and Work Control

The Annular Core Research Reactor and Hot Cell Facility are undergoing significant modification to accommodate their new medical isotope production mission (see text box). At such nuclear facilities, processes for analyzing hazards, establishing controls in an approved safety authorization basis, and authorizing work require a high level of rigor and documentation. DOE and SNL have not demonstrated an appropriate level of rigor and technical discipline for many aspects of the modification process.

Facility modifications were made without adequate analysis.

According to DOE requirements, SNL is allowed to make physical and procedural changes to nuclear facilities (the Annular Core Research Reactor and the Hot Cell Facility) without prior DOE approval as long as such changes stay within the authorization basis or do not result in a change in the Technical Safety Requirements. As part of the facility modification planning process, a safety evaluation of the proposed change is required to determine whether there is an Unreviewed Safety Question. The Unreviewed Safety Question process implemented at Technical Area V was found to lack the formality and technical rigor that is generally expected for nuclear facilities to ensure that the safety envelope is maintained. For example, the safety evaluation for removal of gloveboxes in the Hot Cell Facility did not result in identification of a required Operational Safety Requirement change prior to the work being performed. In another instance, an Unreviewed Safety Question determination was not initially performed for the removal of the shield wall in the Hot Cell Facility. When prompted by Oversight to conduct an Unreviewed Safety Question determination, SNL concluded that the Unreviewed Safety Question determination for the Hot Cell Facility shield wall was negative, using a screening process without performing the required safety evaluation for facility modifications. SNL actions in these instances were not consistent with expectations established in DOE Order 5480.21, *Unreviewed Safety Questions*. Additionally, the quality of the Unreviewed Safety Questions reviewed for the ongoing modifications varied and, in some instances, did not demonstrate a rigorous technical analysis.

SNL has used the Unreviewed Safety Question process as the technical basis for modifications to the Annular Core Research Reactor and the Hot Cell Facility and has determined that modifications being performed are within their current authorization bases. However, both DOE and SNL recognize that the modifications will require significant changes in the authorization basis for both facilities prior to starting production of molybdenum-99 (e.g., the Annular Core Research Reactor requires analysis of new neutron flux patterns in the core, consideration of new accident scenarios caused by the presence of target rods in the core, and revision to the operating envelope to reflect new limits for steady state operations versus experimental activities). While preliminary analyses have been performed for the Annular Core Research Reactor and reviewed by the Annular Core Research Reactor safety committee (with KAO observers present at committee meetings), the analyses are not complete, and the full effect of the modifications on the authorization basis has not been determined. The approach of updating the authorization basis after the fact to show adequacy of design does not promote integration of safety planning and engineering design and may result in missed opportunities to establish engineering safety controls. These deficiencies are partly attributable to NE's direction for a "fast track" approach to facility modifications and funding limitations (as discussed under Balanced Priorities).

Hazards analyses of facility modifications were not rigorous and did not identify potential hazards.

In addition to the changes in the facilities, the work being conducted to modify the Annular Core

Research Reactor and the Hot Cell Facility involves significant hazards, such as installing and removing equipment in a high-radiation environment. The hazards analysis required for this work is covered by Facility Modification Request and Facility Work Request processes. Review of documentation for these modifications indicates that several work activities have been conducted without fully characterizing hazards and without following established safety requirements. For example, the Hot Cell Facility shield wall removal work was initiated without either a Facility Work Request or a Facility Modification Request. The hazards analysis was informal and did not document an identified potential ozone hazard from the plasma cutting torch. Measurement of ozone levels, not taken until the third day of cutting activities, indicated that ozone rose to three times the allowable ceiling concentration within the first 20 minutes of work. The Hot Cell Facility manager initially stated that an informal hazard analysis was conducted on the basis that they were only performing an evaluation of different cutting techniques on the shield wall and that the hazard analysis and modification planning process would be completed subsequently. This approach is not consistent with disciplined operations in nuclear facilities.

The review of several completed Facility Work Requests at the Annular Core Research Reactor and the Hot Cell Facility identified numerous additional procedure violations in completing work requests, indicating insufficient discipline in their approach and execution. In addition, management reviews when authorizing work and during final review and closure of work packages were not adequate to identify these problems. Deficiencies included incomplete work definition, a lack of hazards analysis, inadequate identification and definition of administrative controls, and inadequate identification of post-maintenance testing. In general, work planning and control at Technical Area V are informal and inconsistently applied.

The modifications to the Hot Cell Facility and Annular Core Research Reactor for the molybdenum-99 project will require formal operations authorization to restart both facilities. NE and KAO have not established clear direction on whether the Annular Core Research Reactor restart (without molybdenum-99 targets) will require a readiness assessment or an operational readiness review, which is more rigorous. If a readiness assessment is performed, an operational readiness review would still be required prior to running the reactor with molybdenum-99 targets.

SNL needs to define expectations for integrated safety management processes at the facility and activity level.

In summary, SNL's existing processes for planning and controlling work at nuclear facilities or non-nuclear facilities have significant weaknesses. While AL, KAO, and SNL are taking a proactive stance toward implementing ISMS, SNL has not yet clearly defined expectations for processes to implement the five core safety management functions at the facility and activity level. Many SNL managers view ISMS as an integration of existing processes with a philosophy of "no new requirements." As a result, it is left up to each SNL division to develop its own individual approach to ISMS. While some organizations have developed effective processes, there is a need to define an overall institutional framework that establishes expectations for work planning processes, such as defining work, analyzing hazards, and identifying controls.

Performance Evaluation and Feedback

A pilot line oversight program, in place since 1995, was terminated in April 1997 because SNL assessment activities were not providing sufficient, reliable performance feedback.

Assessment and corrective action programs are essential tools for evaluating ES&H performance and providing the feedback needed to achieve

continuous improvement. The assessment process at SNL was part of a pilot ES&H oversight program established by DOE Headquarters in 1995. This pilot program placed strict limits on line management oversight assessments by DOE program offices and operations offices. DOE assessment activities were limited to Facility Representative program activities and periodic participation by DOE subject matter experts in SNL self-assessment activities using a teaming approach. A basic premise of the pilot program was that DOE could place more reliance on the contractor self-assessment program and thus reduce their line management assessment activities. This approach relies on a strong contractor self-assessment program. The pilot program, originally intended to end September 30, 1997, was terminated in April 1997, after it was concluded that the SNL assessment program was not effective in supporting this new approach to line management oversight.

DOE Performance Evaluations

The DOE assessment program of SNL ES&H performance is intended to follow DOE P 450.5, *Line Environment, Safety and Health Oversight*. It currently includes three major components: the KAO Facility Representative program and subject matter experts, which provide a day-to-day DOE presence at SNL facilities and include activities designed to ensure that DOE is aware of operational issues; a formal annual Multi-program Laboratory Performance Appraisal; and a recently implemented (1996) process for evaluating performance data called the Performance Assessment Matrix. In addition, AL and KAO intend to perform an annual assessment of contractor safety performance, which will include an evaluation of the SNL assessment program.

The KAO Facility Representative program has positive elements but is hindered by insufficient qualified personnel and support from KAO and AL technical staff.

The KAO Facility Representative program is structured, effective at enhancing ES&H performance, recognized by SNL personnel as beneficial, and improving in quality. The Facility Representative program includes a comprehensive process (which includes management attributes matrices/check list with assessment criteria and defined sample sizes) to evaluate ten cross-cutting management areas such as training and corrective action. Although the Facility Representative program has many positive elements, there are a number of issues that diminish its effectiveness:

- KAO has a shortage of fully qualified Facility Representatives. Because of the significant turnover rate for Facility Representatives, KAO has vacant positions. Many of the Facility Representatives have not yet completed their qualifications and thus need to devote a significant part of their time to training/qualification efforts. With the shortages of fully-qualified Facility Representatives, KAO Facility Representatives are experiencing difficulty in simultaneously performing required field activities and completing training/qualification requirements.

- AL and KAO have not taken full advantage of their subject matter experts to address specific technical issues, even though supporting these activities is one of the primary roles of KAO subject matter experts and the AL OTMO organization.

- KAO management has not, in many cases, aggressively pursued issues raised by Facility Representatives to ensure understanding, action, and closure by the contractor. Facility Representative concerns are typically communicated informally to SNL and are not always documented in the KAO Information Management System. KAO did not require a formal response to a March 1997 evaluation of the SNL lessons learned program. SNL responses to KAO concerns with construction safety identified in 1995 and 1996 did not fully address the broader subcontractor oversight

issues raised by KAO and corrective actions related to excavation issues did not address KAO concerns. These concerns have not yet been adequately addressed.

- ES&H deficiencies and issues identified by Facility Representatives are not always clearly defined in the KAO Issues Management System.

KAO's annual appraisal of contractor performance use a conceptually sound approach; however, input data is not adequately verified by DOE.

The FY 1997 annual contractor appraisal, which is currently in progress, is the second performance-based appraisal under the new DOE Multi-program Laboratories Assessment Management Structure. This process is conceptually sound, but its effectiveness is limited because the information on which the appraisal is based is limited in scope or has not been adequately verified by KAO or AL. The ES&H scoring considers only selected elements: performance indicators (which account for 60 percent of the scoring), ISMS implementation, self-assessment, and work hazard surveys. In addition, the appraisal process heavily relies on SNL's quarterly and annual self-assessments. Recent SNL self-assessments of the ES&H elements did not contain objective evidence supporting their performance scores, which in some cases are not consistent with observations of this Oversight evaluation. For example, one of the scoring criteria for the annual appraisal involved establishing and tracking corrective actions to resolve workplace hazards. In their second quarter FY 1997 annual appraisal self-assessment, SNL awarded themselves a perfect score for this criterion. This score was based on a poll of seven of nine division ES&H Coordinators; there was no evidence that SNL evaluated the effectiveness of corrective actions in the field or the processes for identifying and tracking corrective actions. The results of this independent oversight review indicate that there are significant weaknesses in corrective action programs.

The AL and KAO Performance Assessment Matrix is comprehensive in scope and is a conceptually sound approach to evaluating ES&H status. The Performance Assessment Matrix involves analyzing available assessment, occurrence, and Facility Representative activity data. However, as indicated by AL in the June 1997 draft Performance Assessment Matrix report summary for industrial safety, there are limitations on the usefulness of the information in the KAO information management system, the Computerized Accident/Incident Reporting System, and Occurrence Reporting and Processing System data used to determine the program status on a sitewide basis.

Since termination of the pilot line oversight program for SNL, AL and KAO have not established an appropriate level of line oversight.

Currently, the Facility Representative program is the only DOE assessment program that is performing effective "hands-on" reviews of SNL ES&H performance. The pilot program significantly impacted or eliminated other AL and KAO assessment efforts. AL has a well defined and documented program for assessing contractor performance but did not implement it at SNL because of the pilot program restrictions. With the exception of a May 1997 review (which was characterized by AL and KAO as an assistance visit), AL has not performed assessments of SNL since the spring of 1995. During this time, KAO functional area subject matter experts have participated in a few assessments of selected topics but have not addressed many of the important program elements. Since the pilot program was terminated, AL and KAO have not been aggressive in re-establishing an effective DOE assessment program. AL and KAO have not made sufficient use of subject matter experts either to complement the Facility Representatives or to perform field assessments of SNL performance. Except for

Facility Representative activities and the May 1997 assistance visit, AL and KAO have scheduled only a few limited field assessments of SNL ES&H performance for FY 1997. The absence of a comprehensive AL/KAO assessment program also hinders the effectiveness of other AL/KAO assessment activities, such as the contractor appraisals and the Performance Assessment Matrix evaluations, which are dependent on reliable data.

Since the realignment of AL and KAO responsibilities over the past two years, KAO has had primary responsibility for assessing contractor performance. However, KAO has not developed plans or procedures that detail how they plan to conduct the assessments of SNL. In preparation for this Oversight evaluation, AL and KAO performed a review (which AL and KAO characterized as an assistance visit) of most key ES&H functional areas in May 1997; however, AL and KAO did not require SNL to respond to findings or communicate expectations that SNL should develop and implement corrective actions.

According to DOE P 450.5, *Line Environment, Safety and Health Oversight*, which was adopted by KAO, contractor self-assessment activities must be "robust, rigorous, and credible" and the described approach to DOE oversight is intended to be implemented "as an effective contractor self-assessment program is established." In light of weaknesses in SNL's assessment program (described later in this section), which led to termination of the pilot program, AL and KAO need to establish a more comprehensive approach to evaluating SNL ES&H performance. Other areas that require attention include:

- Neither AL nor KAO has a formal internal self-assessment program to evaluate its own performance (although limited internal appraisals have been performed, such as the AL evaluation of the KAO Facility Representative program, completed in March 1997).

- DOE is not consistently verifying complete and effective correction of identified deficiencies and is not holding the contractor accountable for correcting identified deficiencies.

- Other than the Facility Representatives, KAO personnel do not consistently use the KAO Issues Management System (or an alternative systematic method) to document or track issues and deficiencies. KAO has recently initiated more structured trend analyses of KAO Information Management System data, which have identified issues related to maintenance, construction, and contractor safety. However, this trend analysis will not achieve its potential if it does not include results of KAO activities other than Facility Representative observations.

- Both DOE (a team with representatives from DP, AL, and KAO) and SNL conducted tabletop reviews (including interviews and document reviews) of the status of SNL ISMS prototype implementation (performed by two SNL divisions—Physical Sciences and Components, and Laboratories Services). However, by design, neither the DOE nor the SNL review included an assessment of field implementation of the activities within the prototypes. Field implementation reviews are not expected to be performed until November 1997. It is not clear how lessons learned will be made available to other divisions that are now beginning to implement ISMS.

SNL Assessment Processes

Elements of the SNL assessment activities include self-assessments, functional area assessments, and a recently initiated independent appraisal program.

SNL performs many self-assessment activities, but self-assessments are generally not performance- based.

Self-assessment activities, including periodic formal management surveillances, are being performed at the division, center, and department levels in each SNL organization. Many of these assessments are defined in formal procedures that detail requirements for performance,

documentation, and corrective actions. These assessments are identifying ES&H deficiencies and result in corrective actions for individual issues. However, the assessment activities are primarily facility safety walk-through inspections; they typically are not performance-based and do not evaluate work activities, procedures, or programmatic adequacy.

Functional area assessments have been performed in the last year in the areas of radiation protection, industrial safety and hygiene, and Resource Conservation and Recovery Act activities. Most of the functional assessments performed were required by law/order or in reaction to occurrences. With the recent integration of subject matter experts into the line and the reorganization of the ES&H Center, there are few cross-cutting, functional area assessments scheduled. In general, the ES&H Center functional area departments do not have plans or procedures that define how the functional areas will be monitored and assessed. Some required cross-cutting assessment activities, such as maintenance facility inspections and program reviews, are not being performed.

SNL has recently implemented an independent appraisal process that reports directly to senior SNL management.

SNL has recently established an independent appraisal program that is designed to address generic ES&H subjects. Although the program is in its infancy, the concept is sound, personnel involved are competent and experienced, and draft plans and procedures delineate a viable program. Because of its organizational placement reporting directly to the Executive Vice-President, this program has the potential to address significant issues across all SNL operating divisions. The initial appraisal effort, a review of local exhaust ventilation systems conducted in April 1997, was comprehensive and identified a number of technical and programmatic performance deficiencies. The new program has experienced some difficulties (the appraisal report was not well received by the line and has not yet been issued while matters relating to the process, findings, and substance are still being debated) that need to be resolved.

Both DOE and SNL have recognized that SNL assessment programs have not been effectively integrated and coordinated and have not achieved the objectives of a sound self-assessment program. Efforts at developing and implementing an effective self-assessment and corrective action program have been in progress at SNL for several years. Currently, a number of organizations and committees are working to improve the assessment processes at SNL and integrate them into the ISMS. The ISMS Line Implementation Team, which includes representatives from the ES&H Center and various operating divisions, is leading efforts to develop a sitewide strategy for assessments. While this team has established an overall strategy for the assessment program, their conceptual approach has not been translated into specific action for implementing processes with clear milestones and schedules.

Radioactive and Mixed Waste Management Facility

The SNL conceptual approach to assessment activities is sound but will require more than a "repackaging" of the current processes.

The concept of the assessment program currently being studied by SNL appears to be sound and in accordance with the intent of ISMS and DOE P 450.5, *Line Environment, Safety, and Health Oversight.* This conceptual program consists

of line self-assessments, cross-cutting functional area assessments, internal independent assessments, and periodic formal analysis of data from these assessments and data from occurrences, external audits, and Facility Representative observations. However, a common perception expressed by SNL managers is that the current assessments and corrective action programs are sufficient and just need to be repackaged to meet DOE's requirements and expectations. The results of this review indicate that deficiencies in the SNL assessment and corrective action programs require more than "repackaging." To achieve the needed improvements, SNL needs to address issues, such as a site culture that resists centralized institutional requirements and expectations and a consensus-based decision-making process that often results in ambiguous requirements or extended schedules. The needed institutional-level processes do not have to be cumbersome or prescriptive but must clearly communicate management expectations and specific guidance regarding implementation of ISMS.

SNL Corrective Action Mechanisms

SNL employs numerous methods to capture ES&H-related deficiencies to identify and track corrective actions. Responsibility for establishing, implementing, tracking, and verifying completion of corrective actions resides with the affected organization.

SNL corrective actions processes lack important elements of an effective program.

While assigning responsibility for corrective actions to the affected organization is consistent with the principle of line management responsibility for safety, SNL does not have some of the essential elements in place to ensure that the affected organizations take the necessary actions to correct deficiencies. For example:

- Effective mechanisms, such as independent verification and performance-based evaluations, are not in place to ensure that corrective actions are complete and effective. In most cases, there are no procedures requiring the individual managers to delineate or provide evidence of the actual actions taken. In practice, many issues are considered closed based on the intent to perform actions.

- Sitewide instructions that define the requirements for deficiency reporting and corrective action tracking are not established. Further, division-, center-, department-, and facility-level procedures, where available, are not sufficiently comprehensive. Essential elements, such as what issues are to be captured, by whom and where, prioritization, corrective action concurrence and approval, extent of condition analysis, cause analysis, ownership, schedules/milestones, tracking, closure, and verification are unclear and inconsistently implemented.

- Many programmatic issues, including KAO Facility Representative issues, findings from a 1996 hoisting and rigging self-assessment, and a March 1997 KAO lessons-learned assessment, were not being tracked by affected organizations. The source of the issues, not the substance, often dictated whether they were addressed.

In addition to weaknesses in implementation of corrective action processes by the individual organizations, the processes are not effectively coordinated to provide reliable sitewide performance data. For example:

- There are no mechanisms to extract accurate and consistent performance data from the multiplicity of issue documentation and tracking systems to support trend analysis or effective evaluation of sitewide ES&H performance. A few standard and more easily identified statistical performance indicators, such as injury and illness, vehicle accidents, occurrences, training attended, radiation exposure, and number of assessments performed, are formally monitored in some divisions and at the site level.

- Issue tracking systems do not track some important information. The Sandia Issue Management System (referred to as SIMS+) captures only external issues (and then only issues sent to the system administrator). Formal

lower level tracking in divisions, centers, departments, and facilities is typically limited to findings from the targeted, defined "self-assessment" walkthroughs and management surveillances. Procedures typically do not specify the documentation and tracking of deficiencies identified by ES&H subject matter experts and other line personnel. Other systems are used in Technical Area V to track hardware deficiencies and safety committee issues, but there are no procedures for tracking non-hardware deficiencies identified during day-to-day operations. Some ES&H Coordinators track issues, but their records were not always complete or current.

Occurrence reporting and associated corrective actions often do not adequately address root causes.

A number of weaknesses were also identified in SNL occurrence reporting processes and performance. Occurrence reports often did not provide essential details regarding the circumstances and conditions of the event, did not fully identify or evaluate the extent of conditions, improperly identified root causes, or did not fully address the root causes in the corrective actions. Corrective actions for the root causes have not always been timely. No formal sitewide procedures detail the expectations, processes, or roles, responsibilities, and authorities to ensure that occurrences are properly documented, evaluated, and addressed. In January 1997, KAO Facility Representatives formally notified SNL of their concern about the reluctance by SNL to conservatively evaluate and categorize events and near misses as reportable. This reluctance has been confirmed by this evaluation and appears to be partly attributable to SNL perceptions that DOE over-reacts to occurrences and uses the number of reported events as a measure of performance. There is also a perception by KAO that there is a DOE goal to reduce the "noise" (i.e., findings that do not represent significant safety concerns) in the Occurrence Reporting and Processing System. This is a concern that has been identified at other sites.

A variety of lessons learned processes/mechanisms are used at SNL, on both sitewide and lower-tier organization levels. For example, safety-related articles are readily accessible in site newspapers, bulletin boards, and Web pages. Lessons-learned issues are also informally transmitted through various ES&H-related committees, Facility Representatives, and staff meetings of the matrix ES&H teams. Although such informal mechanisms are in place and often useful, there are few formal procedures for soliciting worker input or disseminating lessons learned, and none require formal documentation and evaluation of needed actions. Further, the focus for many of the lessons learned processes is on occurrences (offsite and onsite), with little evaluation or sharing of near misses or assessment findings. Cases of inadequate corrective actions resulting from the lessons-learned process were also identified by the Oversight team.

In summary, AL, KAO, and SNL have some of the important elements of a performance evaluation program in place, but there are weaknesses in many aspects of assessments and corrective action programs. Although hindered by personnel shortages, the Facility Representatives are performing effective reviews that keep KAO managers aware of operational conditions. SNL has several assessment processes in place and has recently enhanced performance evaluation by adding a new independent appraisal program that reports directly to senior SNL management. Some of the SNL assessment activities are effective in identifying and correcting deficiencies; however, SNL assessments do not address all ES&H areas in a systematic manner and are generally not focusing on the effectiveness of ES&H performance in the field. Similarly, the numerous systems for tracking corrective actions do not consistently and effectively capture and resolve ES&H deficiencies. AL and KAO have recognized that the SNL assessment program was not providing sufficient reliable information to DOE to justify the continuation of the pilot line management oversight program. However, since terminating the pilot program, DOE has not been proactive in establishing an effective line management assessment program or using AL and KAO ES&H specialists to complement the Facility Representatives.